REMARKS

Claims 1-69 are pending. Independent claims 1, 22, 44, 63, and 67 were rejected under 35 U.S.C. 103(a) as being unpatentable over Li (USP 6,757,248) in view of Black (USP 6,614,796).

Black describes a buffered Fibre Channel Arbitrated Loop (FCAL) switch. The FCAL switch uses "the normal flow control primitives of the FCAL protocol for hold back purposes to eliminate the need for large buffer memories." (Column 5, Lines 42-50) Black also describes an alternate mode of operation, where the FCAL switch uses "buffers instead of hold back flow control to complete the transaction to busy remote ports." (Column 6, Lines 1-5) "In some species, a single shared buffer or multiple shared buffers on the backplane or in some central location may be used." (Column 6, Lines 27-29) That is, Black only describes using normal flow control primitives of the FCAL protocol for hold back purposes or using buffers instead of hold back flow.

Normal operation of FC switches as described in Black is described in the Background section of the present application. More specifically, "In networks such as fibre channel networks, packet dropping is generally not allowed. Instead, networks such as fibre channel networks implement end-to-end and buffer-to-buffer flow control mechanisms. End-to-end and buffer-to-buffer flow control mechanisms do not allow a first network node to transmit to a second network node until a second network node is ready to receive a frame. The second network node typically indicates that it is ready to receive a frame by granting credits to the first network node. When frames are transmitted, credits are used. When no credits remain, the first network node can no longer transmit to the second network node. However, end-to-end and buffer-to-buffer flow control mechanisms provide only a very rough technique for controlling congestion, as the mechanism blocks all traffic along a particular link." (Page 1, Lines 24-34)

Li describes only congestion control in TCP/IP networks in a "new and efficient Fast Recovery Plus (FR+) mechanism." (Column 11, Lines 30-33) Li merely describes "a new and efficient Fast Recovery Plus (FR+) mechanism provided to distinguish congestion packets loss from individual packet loss due to Bit Error Rate (BER), to reject coming into Slow-Start and facilitate fast recovery when lost packets are due to Bit Error Rate (BER), and to reduce its sending speed as normal TCP upon occurrence of congestion so as to improve the throughput of

connection and TCP performance in high-speed packet-switched networks." (Column 11, Lines 30-50) As noted in the Background section of the present application, it is okay to drop packets for the purpose of congestion control in TCP/IP networks. Consequently, when an intermediate node between a source node and a destination node is congested, the intermediate node can simply drop packets. However, it is extremely undesirable to drop frames at fibre channel switches. Consequently, other mechanisms such as conventional buffer to buffer credit mechanisms and/or the techniques of the present invention are used.

However, neither the conventional fibre channel mechanism described in Black nor the Fast Recovery Plus packet drop mechanism described in Li teach or suggest "sending an instruction from a switch to an intermediate switch between the switch and the source node." Conventional TCP/IP congestion control mechanisms and the one described in Li merely drop packets at the intermediate switch upon determining congestion at the intermediate switch. It would not be obvious and in fact it would be counter intuitive to send an instruction to another switch to instruct the other switch to drop traffic because this would entail additional messages and in fact add to the congestion. However, the techniques of the present invention recognize that there are benefits to doing this in certain circumstances. Li does not even show multiple switches between a source node and a destination node. "As shown in FIG. 3, the packet-switched network 300 includes the same components, such as a source node 310, a destination node 320, and at least one intermediate node 330. The intermediate node 330 may operate to drop data packets, as described with reference to FIG. 2, when there is a queue overflow. Such packet drops may serve as the method of informing the source node 310 of congestion in the TCP/IP network 300."

By contrast, independent claims 1, 63, and 67 explicitly recite "sending a first instruction from the network switch to the first intermediate switch to control traffic from the source node to the destination node." No mention or suggestion is made to a network switch instructing another switch such as an "intermediate switch to control traffic." Using buffers is not sending an instruction from the network to the first intermediate switch to control traffic. Furthermore, using "normal primitives of the FCAL protocol" does not involve sending an instruction to the intermediate switch to control traffic. Neither Black nor Li teach or suggest this element.

Consequently, it is respectfully submitted that Black does not teach or suggest all of the elements of independent claims 1, 63, and 67 including "sending a first instruction from the

network switch to the first intermediate switch to control traffic from the source node to the destination node."

Independent claims 22 and 44 also include elements not taught or suggested in Li or Black. Claim 22 recites receiving a second frame from a "second intermediate node", "wherein the second frame includes instructions to adjust the current allowed rate from the first end node to the second end node." The material the Examiner cites only describes a crossbar switch having various timeslots for transmitting data. No mention is made to any instruction received from a second intermediate node or any instruction from a second intermediate node to adjust the current allowed rate. Claim 44 recites a "filter configured to receive data from the first queue and determine whether transmission of the data should be delayed based on information received from the second external node." The material the Examiner cites only describes LUTs or what is believed to be lookup tables used to stored addresses. No mention is made to any delaying of data based on information received from a "second external node." As noted above, Black only describes using buffers or normal primitives of the FCAL protocol to perform flow control. Using normal primitives of the FCAL protocol or using buffers does not involve receiving an instruction from a second intermediate node or delaying based on information received from a second external node. Li actually suggests that packets should be dropped at the intermediate switch and consequently teaches away from a "second intermediate node", "wherein the second frame includes instructions to adjust the current allowed rate from the first end node to the second end node."

In light of the above remarks relating to independent claims the remaining dependent claims are believed allowable for at least the reasons noted above. Applicants believe that all pending claims are allowable. Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at the telephone number set out below.

Respectfully submitted,
BEYER WEAVER & THOMAS, LLP

Godfrey K. Kwan
Reg. No. 46,850

P.O. Box 70250
Oakland, CA 94612-0250
(510) 663-1100